



Char21™ Filter Socks

Capture Sediment and Pollutants at Construction Sites with Char21™ Filter Socks

For decades, Compost Filter Socks (CFS) have been used at new construction sites to capture sediment and prevent pollution. But not all CFS' are created equal. Different feed stocks and particle sizes can make capture results unpredictable – even when the Socks come from the same supplier.

Unlike most compost socks on the market today, Char21™ Filter Media is a consistent blend of four ingredients that not only capture sediment, but also heavy metals and other pollutants.

- 1. Chopped Switchgrass** – This bulk cellulose component is un-composted, which gives it a longer shelf life than most socks on the market.
- 2. BioChar** – Large chunk (not powdered) hardwood bio-char with at least 80% carbon content that holds together longer for more pollutant removal over time.
- 3. Re-activated Charcoal** – Recycled activated carbon that has been re-baked at a production facility and brought back to at least a 95% effectiveness.
- 4. Calcium Silicate Aggregate (CSA)** – A processed version of “slag”, this inert, fine-grain powder helps increase pH; and is a proven way to precipitate out heavy metals.

★ KEY FEATURES

- ✓ **Shelf Stability:** Socks can be warehoused for months with no smelly side effects.
- ✓ **Lightweight:** About half the weight of typical socks, allowing for more socks per pallet and easier installation by field technicians.
- ✓ **Consistency:** The same four ingredients are blended in the same proportions each time.
- ✓ **Silt and Pollution Retention:** The Char21™ blend captures both sediment and heavy metals.
- ✓ **Longevity:** Designed to perform for up to one year.



Captures sediment, heavy metals, and pollutants.



Lightweight, easy to handle, and install.



Built to last, performs effectively for up to one year, for long-term sediment and pollutant control.



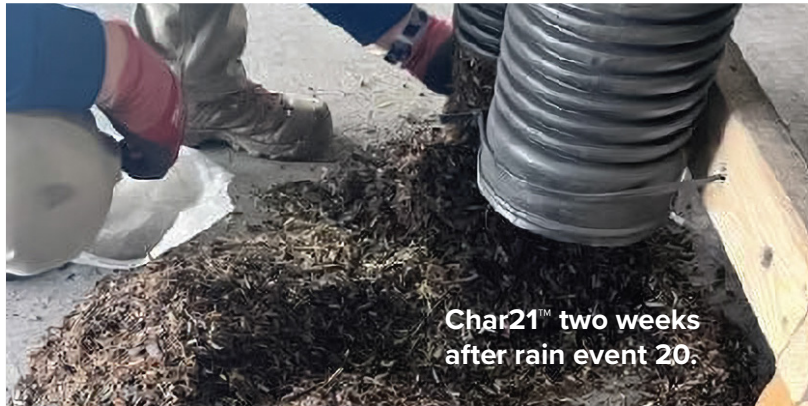
Pipe sections filled with Char21™ filter polluted water through mesh screens.



Polluted water being poured into the filter tubes for testing.



Freshly mixed Char21™ before rain event 1.



Char21™ two weeks after rain event 20.

Heavy Metal Capture Testing

To determine how the Char21™ Filter Socks would perform over time, it was tested over a three month period where it was exposed to 20 simulated rain events.

The chopped switchgrass component had already passed the ASTM 5141 test for hydraulic flow and sediment retention, so the focus of this testing could be centered on the capture of other pollutants.

Each of the following pollutants were independently tested: Cadmium, Chromium, Copper, Zinc, Nickel, Lead, Ammonium-Nitrogen, Motor Oil, Gasoline, and off-road red-dye Diesel.

In each simulated rain event, six liters of water containing 4.5 ml of the pollutant was poured through the filter media. The output was then collected and tested. The results from Rain Event 1, Rain Event 10 and Rain Event 20 are shown in the chart below.

Pollutant	Target Dosing mg/L	RAIN 1 Input mg/L	RAIN 1 Output mg/L	RAIN 1 Change %	RAIN 10 Input mg/L	RAIN 10 Output mg/L	RAIN 10 Change %	RAIN 20 Input mg/L	RAIN 20 Output mg/L	RAIN 20 Change %
Cadmium	0.05	0.053	0.004	92%	0.034	0.006	82%	0.042	0.002	95%
Zinc	1	1.33	0.282	79%	0.682	0.15	78%	1.12	0.1	91%
Nickel	5	5.34	1.38	74%	3.94	1.33	66%	0.926	0.139	85%
Chromium	1	0.94	0.253	73%	0.68	0.283	58%	0.83	0.178	79%
Copper	1	1.08	0.407	62%	0.688	0.254	63%	0.926	0.139	85%
Ammonium-Nitrogen	9	8.18	3.98	51%	7.04	3.38	52%	10.3	2.48	76%
Lead	2	2.33	1.92	18%	1.36	0.967	29%	3.65	2.71	26%
Gasoline	10 ml	10 ml	<1 mL	>90%	10 ml	<1 mL	>97%	10 ml	<0.5 mL	>97%
Diesel	10 ml	10 ml	<1 mL	>90%	10 ml	<1 mL	>97%	10 ml	<0.5 mL	>97%
Motor Oil	10 ml	10 ml	<0.5 mL	>95%	10 ml	<0.5 mL	>97%	10 ml	<0.5 mL	>97%
pH		7.03	8.04	1.01	7.05	7.49	0.44	7.05	7.97	0.94

Test Results: Observation of Char21™ over three months.